

In the Palace of the Naked Mole-Rat

February 24 2009



A Naked Mole-Rat in the IZW, Foto: Stefan Günther.

Naked Mole-Rats are ugly, but also very interesting mammals. Now scientists want to find out, if the males influence the distribution of male and female progeny.

The animal looks like a newborn hamster - still naked and blind. But it is not a hamster; it is a naked mole-rat and already ten years old. These strange creatures live in the semi-deserts of Africa and have a life-span of up to 25 years. This way of life is very unusual for mammals: Their subterranean colonies are organised like an insect community around a single breeding queen. The rest of the animals are workers and soldiers. Since September 2008 there is such a colony with 19 animals at the Berlin Leibniz Institute for Zoo and Wildlife Research (IZW), Germany.

The naked mole-rats did not have to dig their own burrow at the IZW. When they arrived in September 2008 a comfortable tunnel labyrinth with several Plexiglas chambers was waiting for them. At the IZW, unlike in the natural habitat, soldier mole-rats are not required as sentinels at the burrow entrance to guard against enemies. Nevertheless, the workers have a lot to do: They crawl busily over and under each other, moving backwards as fast as they move forward. They transport huge quantities of straw, paper towels and food, scurrying back and forth between the chambers to constantly refurbish the burrow. Each chamber has its own established function such as storage cupboard, sleeping chamber or toilet. The occupancy of the different chambers changes from time to time.

“The queen has the most attractive job,” says Dr. Thomas Hildebrandt. She is somewhat larger and lighter in colour than her subjects and is therefore easy to recognise. The queen suppresses potential rivals by secreting a messenger substance in her urine that suppresses fertility in other females. When the queen dies a palace revolution ensues, as only one female can ascend to the throne. Fierce fighting may occur - sometimes to the death - to determine who will succeed. The winner now takes on the characteristics of the queen. If the colony does not perish during this crisis, it takes about half a year until the new queen is able to reproduce. The queen in the IZW is still the uncontested matriarch; to date she has had one litter of five pups.

Reproduction is what interests IZW scientists most about the naked mole-rats. Dr Thomas Hildebrandt explains why: “Until now it was generally thought that the distribution of male and female progeny of mammals was completely random. We suspect, however, that the males influence sex ratio by producing more sperm of one sex. It is generally more advantageous for the colony to have female progeny, because as workers they benefit the colony more than male offspring.” If in another situation the colony needs more males, the sperm composition changes in favour

of males, the scientists surmise. Such a principle may not just apply to naked mole-rats, but also to other mammals.

Provided by Forschungsverbund Berlin e.V. (FVB)

Citation: In the Palace of the Naked Mole-Rat (2009, February 24) retrieved 11 May 2024 from <https://phys.org/news/2009-02-palace-naked-mole-rat.html>

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